Open for the future. More customization for ZEISS O-INSPECT

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Abstract:

The new ZEISS O-INSPECT family provides even more flexibility than before: users can now choose between several machine sizes and configurations of the multi-sensor measuring machine and various options. For example, they can integrate or retrofit a chromatic focus sensor as needed. In addition to numerous customization options, the new product family also features considerably higher dynamics.

KEYWORDS: **multisensor measuring machine, metrology**

Multisensor measuring machines already guarantee a high degree of flexibility. The ZEISS O-INSPECT family (fig. 1) is now exceeding expectations: anyone on the search for a contact-optical measuring machine will now be able to choose from several sizes, load capacities and contact probes. All this with increased dynamics and the option of adding a chromatic focus sensor (CFS) at any time. Since the launch of the first models in the 1980s, contact-optical measuring machines have proven their worth in a wide range of applications. “This is what has made multisensor measuring machines so popular – particularly the ZEISS O-INSPECT,” says Christoph Stark, Product Manager at ZEISS. Tooth implants, tiny vehicle parts or sensitive smartphone components: for workpieces that are either too small or delicate, or when large quantities have to be measured, users can simply switch on the camera sensor on ZEISS O-INSPECT. For 3D characteristics, the benefits of the contact sensor come into play. The chromatic focus sensor (CFS) closes the gap between the contact and optical sensors. It measures even small and sensitive workpieces whose reflecting or low-contrast surfaces are too much for the autofocus systems on camera sensors. Until now, users were able to choose between two ZEISS O-INSPECT sizes: a compact system with a measuring range of 12 cubic decimeters and a larger model featuring 32 cubic decimeters. The larger version also featured a white light sensor. In the future, the ZEISS O-INSPECT family will be comprised of multiple machine sizes, configurations and options. “We

are thus providing our customers with considerably more flexibility when they select the right system for their personal requirements," says Stark.

Fig. 1. Zeiss O-INSPECT product range

S, L or XXL?

Twice the measuring range with enhanced accuracy: measuring machines must be able to keep pace with products such as smartphones as they become increasingly popular and enter the market in ever shorter product cycles. However, anyone that has to measure the largely minute components, on pacemakers for example, and wants to take advantages of the chromatic focus sensor is no longer limited to one machine size. With ZEISS O-INSPECT, operators now have more options available: the smallest model measures just 300x200x200 mm, i.e. it has a measuring range of 12 cubic decimeters and a sufficient load capacity for these applications. The next size up measures 500x400x300 mm or 60 cubic decimeters. Despite the nearly doubled measuring range, there are no compromises in accuracy or dynamics. Furthermore, the machine can accommodate even heavier loads. ZEISS also offers an XXL model for large or heavy workpieces, or large pallets which hold many parts. It features a measuring range of 800x600x300 mm, or 144 cubic decimeters and is designed to handle loads of up to 100 kilograms. More sensitive or flexible measurements? Users also experience great flexibility with the contact sensor. The ZEISS VAST XXT TL1 and ZEISS VAST XXT TL3 scanning probes are available here (fig. 2). The TL1 features minimal measuring forces and is therefore ideal for scanning sensitive workpieces such as components for camera lenses and thin-walled, injection-molded plastic parts for smartphones. The TL3 on the other hand can be used more flexibly for larger workpiece dimensions: with a heavier stylus system, it also achieves the specified accuracies. Furthermore, operators already using a ZEISS DuraMax or ZEISS CONTURA coordinate measuring machine with ZEISS VAST XXT TL3 can now use the stylus systems from these machines on ZEISS O-INSPECT. As a result, the ZEISS O-INSPECT can be used for the tasks normally done on contact measuring machines when needed (fig.3). According to Stark, "This is another step towards increased flexibility."

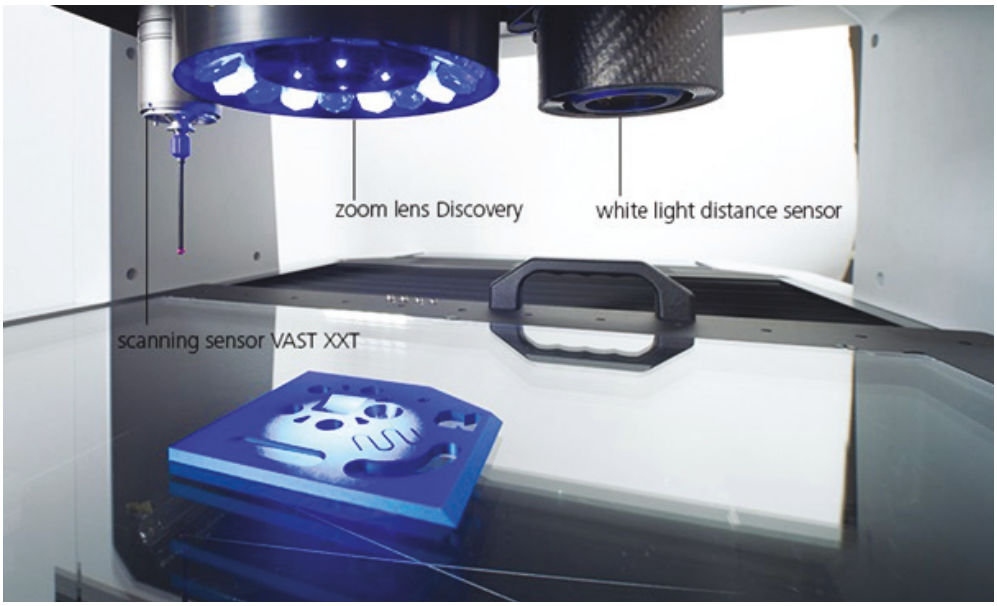

Fig. 2 Zeiss O-INSPECT features

Order right away or upgrade later?

Until now, many options were tied to a certain ZEISS O-INSPECT size; today they are available for all: for example, the three-point fixture for pallet systems or the chromatic focus sensor (CFS), which is beneficial for manufacturers of microcomponents and optical camera lenses. They no longer have to buy a larger measuring machine just to have all three sensors. The CFS can also be retrofitted because ZEISS equips all O-INSPECT CFS models with the required mount, light guide cable, etc. without any additional costs. According to Stark, "It is a secure investment for companies that want to be prepared for the future." When a product portfolio grows or quality requirements climb, these users are no longer forced to buy new equipment. For example, if the gap between plastic joints on electronic controllers in the car industry shrinks to the point that a contact measurement is no longer possible, a CFS can be easily retrofitted. Users who want to measure multiple parts on pallets also benefit from the ZEISS O-INSPECT line: the integrated three-point receptacle that makes the alignment and positioning of pallets on the measuring machine so easy and productive is now a standard feature on all systems. How do users benefit? During a measurement, they can clamp additional workpieces to a second pallet. Afterwards, they only have to position the pallet on the three-point receptacle and start the measurement. This process can also be fully automated with a loading robot. This enables measurements 24/7 without operator influence. A new feature: when a pallet is positioned, the machine automatically documents the temperature of multiple workpieces – the basis to mathematically compensate for errors in the measured values. This is made possible by the integrated temperature interface between the measuring machine and pallet.

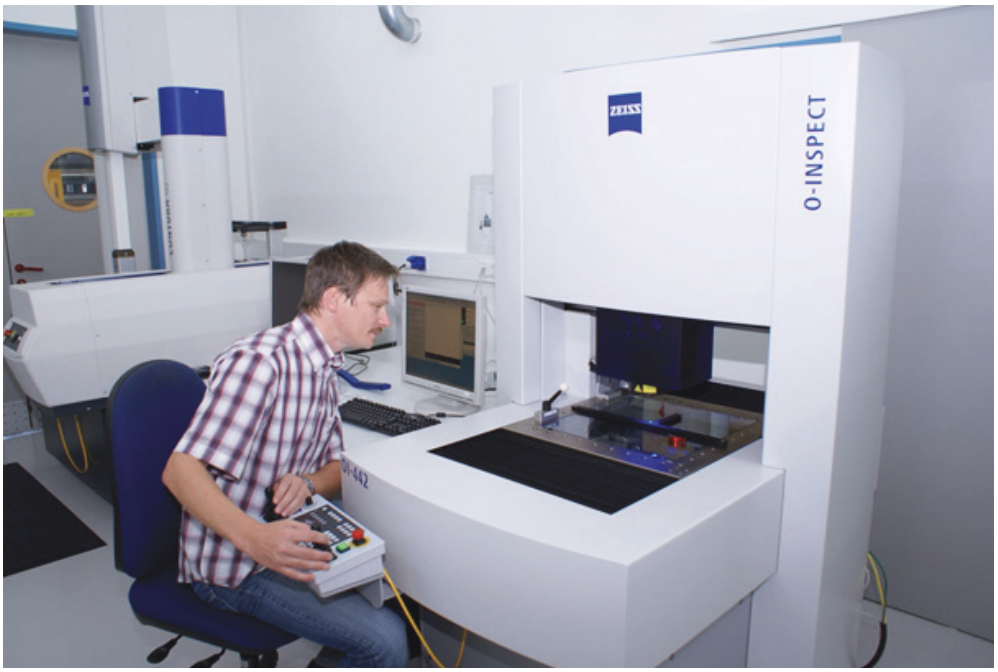

Fig. 3. Optical measurement of a fully adjustable anterior guidance table with the O-INSPECT multisensor measuring machine

Higher dynamics? Not an option – standard

In addition to numerous customization options, the new ZEISS O-INSPECT product family also features considerably higher dynamics. This applies to both the travel speed in manual operations as well as CNC runs. In order to achieve this dynamic despite the larger measuring range, developers pooled all their experience from the ZEISS Max line and Performance measuring machines. This enabled them to integrate more powerful drive components and controllers. Furthermore, a new design allowed them to reduce the moving weight. As a result, travel speed and acceleration increased. "The result is a product family that is not only clearly more flexible, but also more productive and thus worth the investment from day one," emphasizes Stark. Seeing and understanding – with ZEISS CALYPSO Together with ZEISS CALYPSO, ZEISS O-INSPECT opens up entirely new dimensions of visualization. You see the actual status, nominal display and deviations simultaneously, making it particularly easy to properly allocate and interpret the measuring results.